

### Remarks

Reconsideration and withdrawal of the rejections of the claims, in view of the amendments and remarks herein, is respectfully requested. Claims 1, 33 and 35 are amended. Claims 1-14 and 16-35 are now pending in this application. The amendments are intended to advance the application and are not intended to concede to the correctness of the Examiner's position or to prejudice the prosecution of the claims prior to amendment, which claims are present in a continuation application of the present application.

#### *The 35 U.S.C. § 112, Second Paragraph, Rejections*

The Examiner rejected claims 33 and 35 under 35 U.S.C. § 112, second paragraph, as being indefinite, for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The amendments to claims 33 and 35 moot the § 112(2) rejections. Accordingly, withdrawal of the § 112(2) rejections is appropriate and respectfully requested.

#### *The 35. U.S.C. § 112, First Paragraph, Rejections*

The Examiner rejected claim 1 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is respectfully traversed.

The Examiner is requested to consider that in Amgen v. Hoechst (65 U.S.P.Q.2d 1385 (Fed. Cir. 2003)), certain claims at issue were directed to types of cells that could be used to produce recombinant human erythropoietin. The Federal Circuit stated that the words "vertebrate" and "mammalian" readily "convey [] distinguishing information concerning [their] identity" such that one of ordinary skill in the art could "visualize or recognize the identity of the members of the genus" and affirmed the district court's conclusion that disclosure of two species of vertebrate or mammalian cells was sufficient written description to support a "product" claim (page 1398).

The specification describes the use of two lectins known to bind to sialic acid containing molecules to select for cells, e.g., mammalian cells (claim 2) and avian cells (claim 7), with

reduced numbers of those molecules from parent cells known to be competent for influenza virus replication, e.g., bovine cells, swine cells, ferret cells, human cells, canine cells and avian cells, i.e., cells from organisms recognized as being susceptible to influenza virus infection (see Table 4 in Chapter 51 of Fields Virology, Knipe et al., eds., (1985), a copy of which is included herewith). Further, influenza virus is known to bind to sialyl oligosaccharides on cells (page 1, lines 17-21 of the present specification), i.e., cells susceptible to influenza virus infection have sialyl oligosaccharides.

Accordingly, Applicant has conveyed relevant, identifying characteristics of the genus of claimed mutant cells, e.g., by disclosing a functional characteristic coupled with a known or disclosed correlation between function and structure (lectins which bind sialic acid are useful to select for cells with reduced sialic acid containing molecules, molecules which are receptors for influenza virus), such that one skilled in the art could visualize or recognize the identity of the members of the genus.

The Examiner also rejected claims 1-11 and 32-35 under 35 U.S.C. § 112 first paragraph, as containing new matter due to the recitation of “sialic acid containing molecules. This rejection is respectfully traversed.

As disclosed in the specification, the hemagglutinin (HA) of influenza virus binds sialyl oligosaccharides, oligosaccharides containing terminal sialic acid linked to galactose, on host cell surface glycoproteins (page 1, lines 18-21). It is also disclosed that the mutant cell of the invention has altered expression of sialic acid containing host cell receptors (page 2, lines 21-22). To isolate such a host cell, the specification relates that cells are contacted with agents that bind to sialic acid in the context of other linked molecules (page 3, lines 15-28). Therefore, the phrase “sialic acid-containing molecule” is supported by the specification.

The Examiner also rejected claim 33 under 35 U.S.C. § 112, first paragraph, as containing new matter for the recitation of “in which influenza virus with reduced sialidase efficiently replicate.” This rejection is respectfully traversed.

The Examiner is respectfully requested to refer to page 22, lines 19-22 where it is disclosed that two viruses which lack sialidase activity (due to a deletion in the NA gene, see Figure 2) grow in MaKS cells (cells that have an extensive reduction of sialic acid receptors, see page 20, lines 20-21 and Table 2).

Hence, withdrawal of the rejections under § 112(1) is appropriate and respectfully requested.

*The 35 U.S.C. § 102(b) Rejections*

The Examiner rejected claims 1-4 and 8 under 35 U.S.C. § 102(b) as being anticipated by Martin et al. (*Virology*, 241:101 (1998)) or Brandli et al. (*J. Biol. Chem.*, 263:16283 (1988)). These rejections, as they may be maintained with respect to the pending claims, are respectfully traversed.

Martin et al. disclose that influenza virus HA proteins with substitutions in the receptor binding site can affect the ability of HA to bind to human erythrocytes, presumably due to the reduced affinity of mutant HA for sialic acid (pages 105-106). It is disclosed that four transfectant viruses with mutant HAs were able to infect MDCK cells and embryonated chicken eggs with efficiencies comparable to wild-type (page 106), although the infectivity of one of the transfectant viruses on a mutant ricin-resistant MDCK cell ("MDCK RCA<sup>r</sup>") was greatly reduced compared to wild-type MDCK cells. It is further disclosed that MDCK RCA<sup>r</sup> cells have a 70 to 75% reduction in cell surface sialic acid (citing to Brandli et al., 1988), and that these cells may produce reduced virus yields (citing Green et al., *J. Cell. Biol.*, 89:230 (1981)).

Brandli et al. disclose that a ricin-resistant MDCK cell line (MDCKII-RCA<sup>r</sup>) and wild-type cells bind wheat germ agglutinin (specific for *N*-acetylglucosamine and *N*-acetylneuraminic acid), concanavalin A (specific for mannose) and *H. pomatia* agglutinin (*N*-acetylgalactosamine), which binding was unaffected by exogalactosylation (page 16286). It is further disclosed that wild-type cells did not contain significant amounts of *N*-acetylglucosamine (assessed by *B. simplicifolia* agglutinin binding) while mutant cells bound *B. simplicifolia* agglutinin, which could be eliminated by exogalactosylation. In contrast to wild-type cells, it is disclosed that mutant cells did not bind peanut lectin (specific for terminal galactose linked to *N*-acetylgalactosamine). While mutant cells had decreased binding to (70 to 75%) *Limax flavus* agglutinin (LFA, a lectin which binds sialyl residues in a non-glycosidic linkage specific manner, see Cross et al., *J. Biol. Chem.*, 278:4112 (2003), of record) (pages 16287-8 of Brandli et al.),

Brandli et al. conclude that MDCKII-RCA<sup>r</sup> cells are deficient in the addition of galactose residues to *N*- and *O*-linked glycans (page 16286).

None of the cited references discloses a cell line which has reduced levels of terminal sialic acid, e.g., reduced levels of *N*-acetylneuraminic acid (note that MDCKII-RCA<sup>r</sup> cells bound wheat germ agglutinin which is specific for *N*-acetylglucosamine and *N*-acetylneuraminic acid).

Thus, withdrawal of the § 102(b) rejections is respectfully traversed.

**CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6959 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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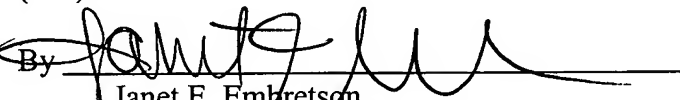
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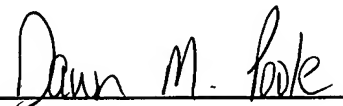
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September 13, 2004 By 

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